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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/724,883	11/28/2000	John Edward Tomaschke	7703-PA02	6918
27111	7590	08/11/2004	EXAMINER	
GORDON & REES LLP 101 WEST BROADWAY SUITE 1600 SAN DIEGO, CA 92101			MENON, KRISHNAN S	
			ART UNIT	PAPER NUMBER
			1723	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

**Office Action Summary**

Application No.

09/724,883

Applicant(s)

TOMASCHKE, JOHN EDWARD

Examiner

Krishnan S Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2004.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-21, 23, 25 and 27-39 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 15-21, 23, 25, 27 and 29-38 is/are rejected.  
 7) ☐ Claim(s) 28 and 39 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) ☐ Notice of Informal Patent Application (PTO-152)  
 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

Claims 15-21, 23, 25 and 27-39 are pending.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 15-20, 25, 29-34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al (US 4,983,291) in view of applicant's own admission by 131 affidavit and Kiefer et al, "Optimizing the Performance of Low Fouling Membranes for the World's Largest Nanofiltration Plant".

Chau (291) teaches and claims (in claim 1) a composite membrane comprising a supportive porous under-structure, a top layer of cross linked polyamide thin film on the top of a porous polysulfone support structure, the top layer having contacted with a ***sulfonic acid compound*** (sulfonic acid, toluene sulfonic acid, amine salt of sulfonic acid) whereby the membrane shows a salt rejection of at least 25% and flux of about 15 GFD as in instant claim 15 and 29 (working examples, col 4 line 51- col 8 line 21, especially col 6 line 58-68, and claims).

Claims 15, and particularly claim 29, claim flux >15 GFD. The flux of the high flux membrane is about 15 GFD in the working examples of Chau ref came from the data of

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PTSA. Since the applicant has cancelled the limitation of PTSA from the claim in this amendment, there is a question whether the Chau high flux membrane (Chau abstract) *inherently* is capable of providing 15GFD or more flux with other sulfonic acids. This would be obvious to one of ordinary skill in the art from applicant's own admission by the 131 affidavit and the supporting exhibit, Kiefer ref. In these, applicant admits (albeit inadvertently) that the flux of the Chau membrane is significantly greater than 15 GFD (see figures 1,2 and 5: 0.2 GFD/psi line represent 15 GFD at the claimed test condition which is given in Table 1). Applicant admits that the membrane submitted by the supplier 'Koch membranes' evaluated in the Kiefer ref is Chau membrane (pages 9, 19 and 20 of the applicant's remarks).

The porous backing is a polysulfone as in claim 18 and 32 (examples), with aromatic diamine as in claim 16 and 30, aromatic diacyl halide as in claim 17 and 31 (examples, claims), it is a thin film flat sheet as in claim 19 and 33, and spiral wound as in claim 20 and 34(col 8 lines 10-12), and sulfonic acid in water as in claim 25 and 37 (all in Chau: tables, working examples, col 4 line 51- col 8 line 21).

2. Claims 21, 23, 27, 35, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al (US 4,983,291) in view of applicant's own admission by 131 affidavit and Kiefer et al, "Optimizing the Performance of Low Fouling Membranes for the World's Largest Nanofiltration Plant" as in claims 15 and 29 above and further in view of Koo et al (US 6,063,278).

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Instant claims add further limitations of the species of sulfonic acids. Koo teaches methane sulfonic acid, ethane sulfonic acid and benzene sulfonic acid for making composite reverse osmosis membranes (see col 3 lines 30-37). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Koo in the teaching of Chau to make polyamide reverse osmosis membranes because Koo teaches that these sulfonic acids are equivalent for providing high flux, high rejection membranes (examples 1,2: Koo) that could be handled dry as taught by Chau (col 6 lines 58-68). A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (discussed in more detail below) and In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991) (discussed below and in MPEP § 2144) for an extensive review of the case law pertaining to obviousness based on close structural similarity of chemical compounds. See also MPEP § 2144.08, paragraph II.A.4.(c).

### ***Allowable Subject Matter***

Claims 28 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The closest prior arts are Chau' 291 and Koo'278, both of which describe high flux polyamide semipermeable membranes. Chau ref teaches high flux membranes obtained by a secondary treatment with sulfonic acid compounds. However, these references singly or in combination together or with other references do not teach a high flux membrane obtained particularly by secondary treatment with trifluoromethanesulfonic acid. Even though the Chau ref teaches generic sulfonic acids and Koo reference teaches specific sulfonic acids like methane sulfonic acid, and one of ordinary skill in the art would contemplate using the sulfonic acids taught by Koo for the generic sulfonic acids taught by Chau, the fact that Trifluoromethane sulfonic acid is not taught by Koo and the improved results obtained by the applicant (specification Table 2 for TFMSA when compared with Table 1 for MSA) for the Trifluoromethanesulfonic acid would make these claims unobvious over the prior arts.

#### ***Response to Amendment***

The 131 declaration filed on 5/10/04 under 37 CFR 1.131 is sufficient to overcome the question of statutory 'on sale' bar that came up during the interview of 4/6/04.

#### ***Response to Arguments***

Applicant's arguments filed 5/10/04 have been fully considered but they are not persuasive for the rejected claims.

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Applicant's lengthy arguments run 20 pages (page 6 – 24). The main points of argument are

(1) deletion of aryl sulfonic acid and the limitation of >15 GFD flux in claim 29 would make these claims patentable over Chau (page 7): while the deletion of the aryl sulfonic acid from claim 15 with the flux *at least about* 15 GFD in claim 15 and *at least* 15 GFD in claim 29 may make the 102(b) rejection weak, applicant's admission and the test results from the Kiefer ref make this a strong 103 rejection as discussed above, because applicant admits that the Chau membrane is what is supplied by the supplier 'Koch membranes', one of the membranes tested, and all the membranes tested show significantly greater than 15GFD flux.

(2) the number of compounds taught by Chau make it impossible, without undue experimentation, to discover the method of the invention that produces the membrane with the desired characteristics (page 9): Chau reference teaches a number of compounds that could be used for the secondary treatment to make the high flux membrane, and provides test results for many of the compounds taught. This argument would be good had the applicant been claiming specific sulfonic acids showing superior performances (please note that the claim to specific sulfonic acid TFMSA – claims 28 and 39 – are indicated as allowable). However, applicant's claim also contain a large number of sulfonic acids and sulfonic acid compounds without any test data (test results provided only for just two sulfonic acids – MSA and TFMSA), which would make the claims obvious over the combination of Chau and Koo references, Koo reference being used to show equivalent sulfonic acids.

(3) election of species argument (pages 10-16):

Is Genus so small that each member is inherently disclosed? This question is not relevant because the applicant's claims are for genus; a large number of sulfonic acids. In "*In re Jones*", only one compound was claimed from the large 'genus' of the prior art.

Express teachings that would have motivated the selection: yes, teachings that sulfonic acids (genus), similar to what is claimed by the applicants would work to produce high flux membranes is obtained from the Koo reference – see rejection.

Teaching of structural similarity: the question is what would define the structural similarity? Would this be limited to alkyl sulfonic acids, sulfonic acids, or just any acid? Chau ref teaches that any acid would provide the results, and provides test results with several different acids. Koo reference teaches sulfonic acids. Since the applicants claim many (generic) sulfonic acids, this argument is also not persuasive.

Support for Selection of species or subgenus: support for selection of subgenus is found in Koo ref – see rejection. Selection of species is not relevant since the applicants claim the subgenus, sulfonic acids.

(4) secondary considerations, which are unexpected results and commercial success: It may be noted that the unexpected results in the testing of the ESNA-LF membrane are "low fouling" and the hardness (concentration of calcium salts) of the permeated water from the membrane, which fell within the requirements of the City of Boca Raton (see the Kiefer ref figures 4 and 5). While these results may be unexpected, the applicant's specification or the claims as originally filed do not have



disclosure to support low fouling and the calcium passage obtained in the test results, and such limitations are not claimed. With regard to the commercial success, the applicant has provided one data point which showed that one customer had decided to select his membrane over a competitive bid from about three suppliers, and applicant's bid won on the basis of meeting the customer requirements over the competition, the requirements being not what is disclosed or claimed by the applicant in the patent application. It is interesting to note that the basis of this argument by the applicant is that the prior art Chau membrane fails to meet the requirements of the customer, but in that process applicant admits that Chau membrane meets the claimed limitation of 'at least 15 GDF flux', because the test results by the customer show that the prior art Chau reference has flux substantially above 15 GFD. Therefore, the secondary considerations are also not persuasive in overcoming Chau ref.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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